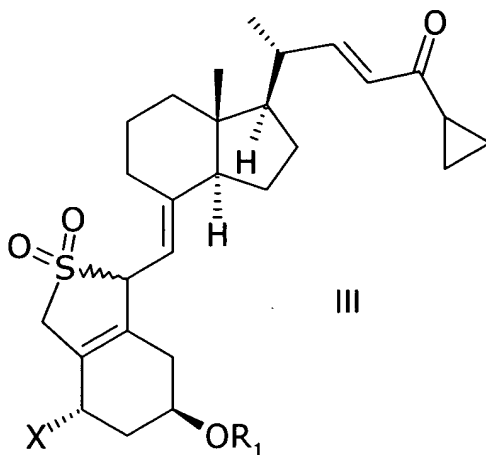


**AMENDMENTS TO THE CLAIMS**

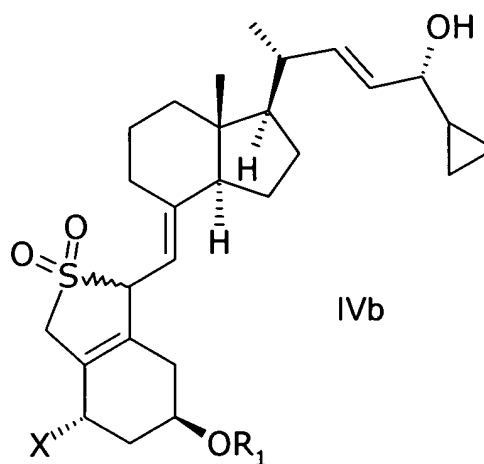
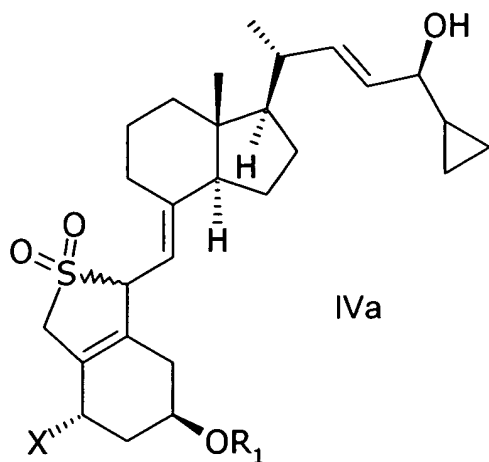
Claims 1-29 (Cancelled)

30. (New) A method of reducing a compound of general structure III,

wherein X represents either hydrogen or OR<sub>2</sub>,and wherein R<sub>1</sub> and R<sub>2</sub> may be the same or different and represent hydrogen, or a hydroxy protecting group,

in an inert solvent with a chiral reducing agent or with a reducing agent in the presence of a chiral auxiliary,

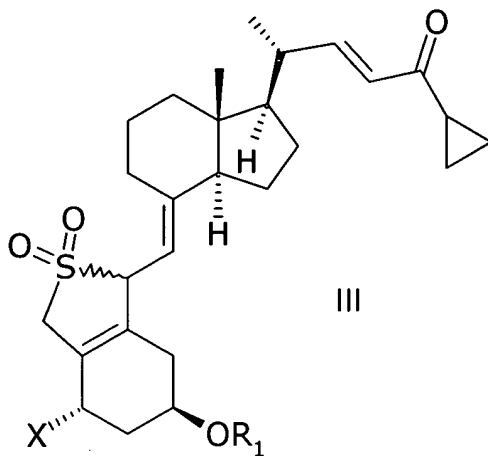
to give a mixture of compounds of general structure IVa and IVb,



which is enriched with IVa, wherein X, R<sub>1</sub>, and R<sub>2</sub> are as defined above.

31. (New) A method for producing calcipotriol {(5Z, 7E, 22E, 24S)-24-cyclopropyl-9,10-secochola-5,7,10(19),22-tetraene-1 $\alpha$ -3 $\beta$ -24-triol} or calcipotriol monohydrate comprising the steps of:

(a) reducing a compound of general structure III,



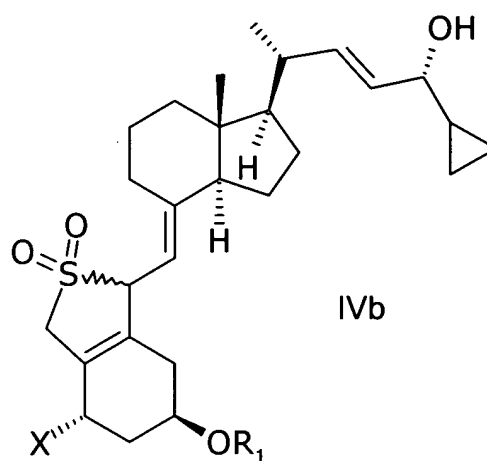
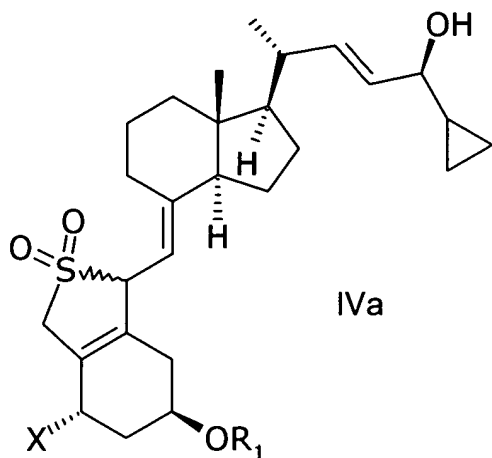
wherein X represents OR<sub>2</sub>,

and wherein  $R_1$  and  $R_2$  may be the same or different and represent hydrogen or a hydroxy protecting group,

in an inert solvent with a chiral reducing agent or with a reducing agent in the presence of a chiral auxiliary,

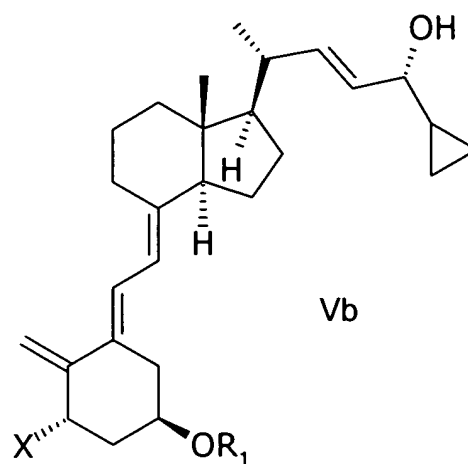
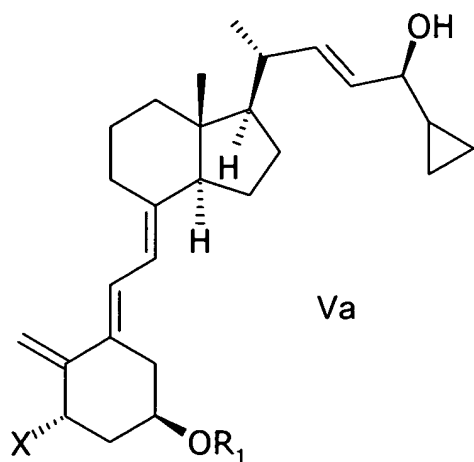
to give a mixture of compounds of general structure IVa and IVb,

which is enriched with IVa,



wherein X,  $R_1$  and  $R_2$  are as defined above;

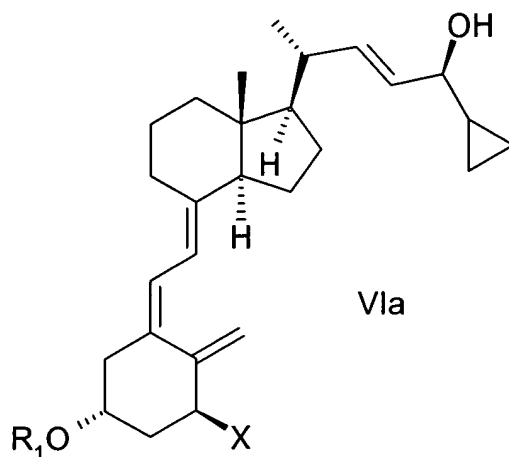
(b) reacting the mixture of compounds of general structure IVa and IVb, which is enriched with IVa, in the presence of a base to give a mixture of compounds of general structure Va and Vb, which is enriched with Va,



wherein X, R<sub>1</sub> and R<sub>2</sub> are as defined above;

(c) separating the compound of general structure Va from the mixture of compounds of general structure Va and Vb which is enriched with Va, wherein X, R<sub>1</sub> and R<sub>2</sub> are as defined above;

(d) isomerising the compound of general structure Va to the compound of general structure VIa,

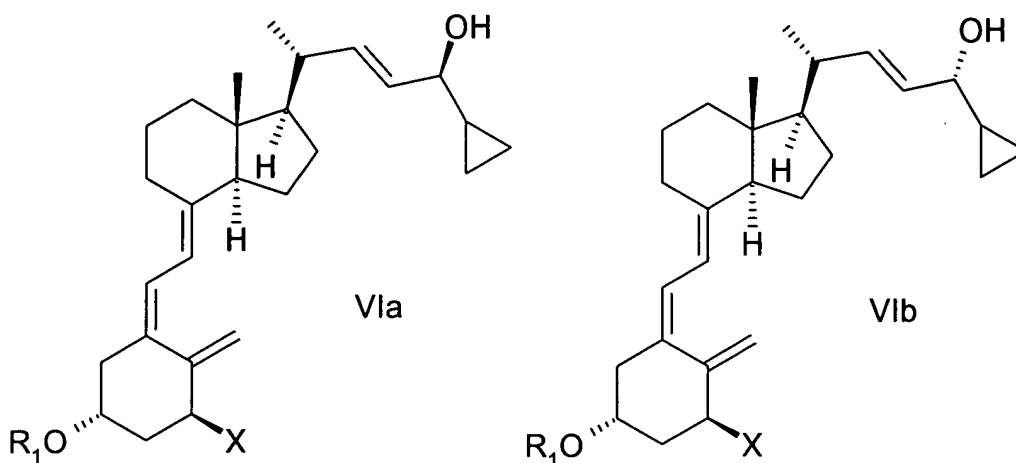


wherein X, R<sub>1</sub> and R<sub>2</sub> are as defined above; and

(e) when  $R_1$  and/or  $R_2$  are not hydrogen, removing the hydroxy protecting group(s)  $R_1$  and/or  $R_2$  of the compound of general structure VIa to generate calcipotriol or calcipotriol monohydrate.

32. (New) A method for producing calcipotriol or calcipotriol monohydrate comprising steps (a) – (b) of claim 31 and further comprising the steps of:

(f) isomerising the mixture of compounds of general structure Va and Vb, wherein X,  $R_1$  and  $R_2$  are as defined in claim 2, which is enriched with Va, to a mixture of compounds of general structure VIa and VIb, which is enriched with VIa,



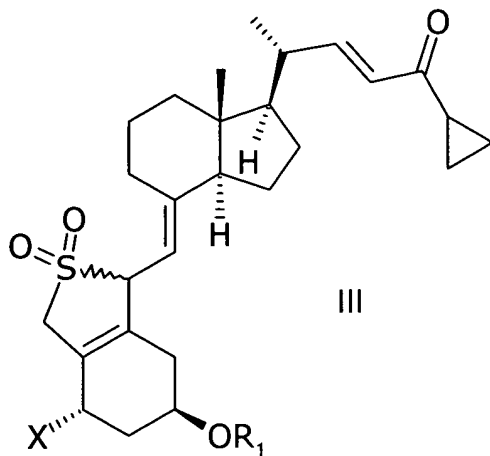
wherein X,  $R_1$  and  $R_2$  are as defined above;

(g) separating the compound of general structure VIa from the mixture of compounds of general structure VIa and VIb which is enriched with VIa, wherein X,  $R_1$  and  $R_2$  are as defined above;

(h) when  $R_1$  and/or  $R_2$  are not hydrogen, removing the hydroxy protecting group(s)  $R_1$  and/or  $R_2$  of the compound of general structure VIa to generate calcipotriol or calcipotriol monohydrate.

33. (New) A method for producing calcipotriol {(5Z, 7E, 22E, 24S)-24-cyclopropyl-9,10-secochola-5,7,10(19),22-tetraene-1 $\alpha$ -3 $\beta$ -24-triol} or calcipotriol monohydrate comprising the steps of:

(j) reducing a compound of general structure III,



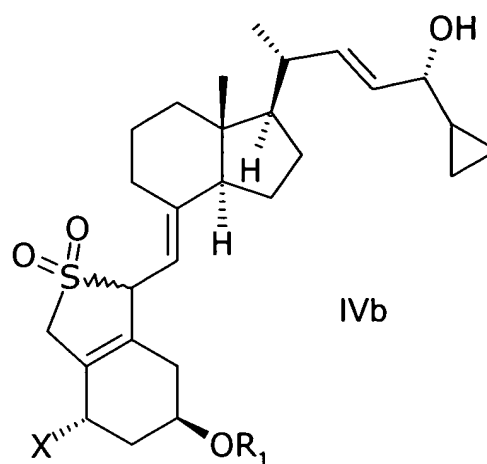
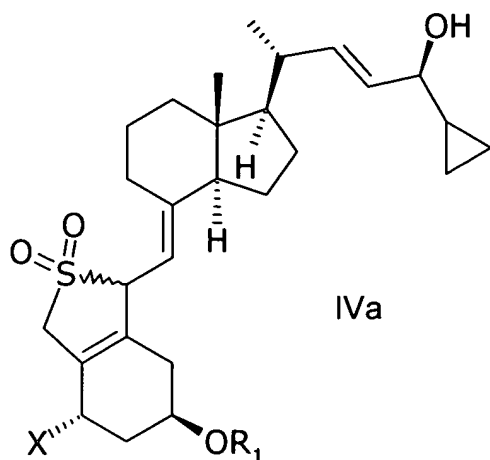
wherein X represents hydrogen,

and wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group,

in an inert solvent with a chiral reducing agent or with a reducing agent in the presence of a chiral auxiliary,

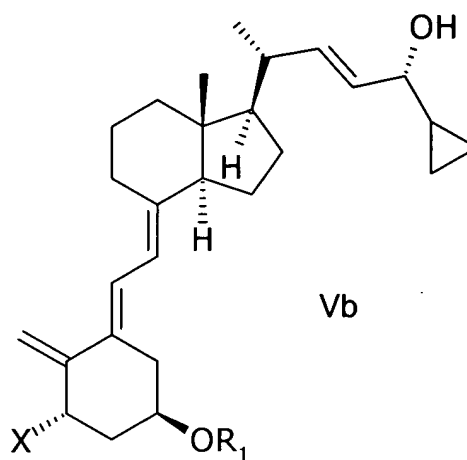
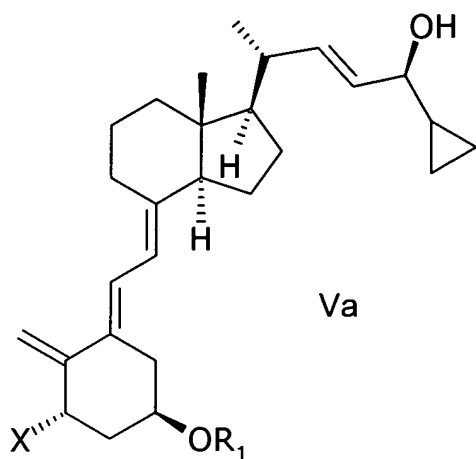
to give a mixture of compounds of general structure IVa and IVb,

which is enriched with IVa,



wherein X and  $\text{R}_1$  are as defined above;

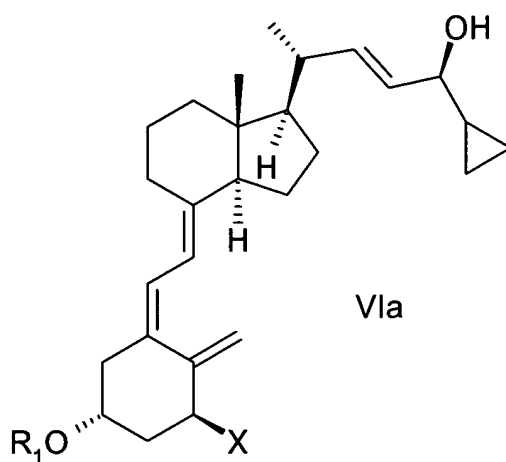
(k) reacting the mixture of compounds of general structure IVa and IVb, which is enriched with IVa, in the presence of a base to give a mixture of compounds of general structure Va and Vb, which is enriched with Va,



wherein X and  $\text{R}_1$  are as defined above;

(l) separating the compound of general structure Va from the mixture of compounds of general structure Va and Vb which is enriched with Va, wherein X and  $\text{R}_1$  are as defined above;

- (m) hydroxylating the compound of general structure Va with a suitable hydroxylating agent, wherein X and R<sub>1</sub> are as defined above to give a compound of general structure Va, wherein X represents OR<sub>2</sub> and R<sub>2</sub> represents hydrogen, and wherein R<sub>1</sub> is as defined above;
- (o) isomerising the compound of general structure Va to the compound of general structure VIa,

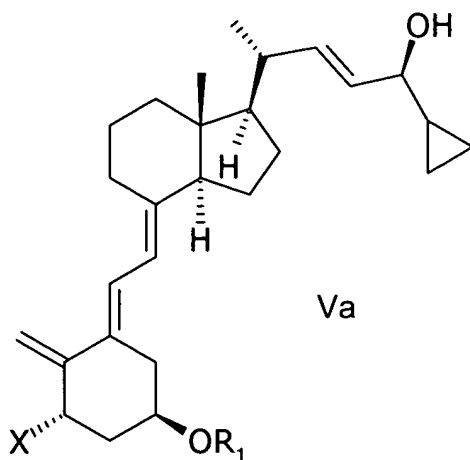


wherein X, R<sub>1</sub> and R<sub>2</sub> are as defined above; and

- (p) when R<sub>1</sub> is not hydrogen, removing the hydroxy protecting group R<sub>1</sub> of the compound of general structure VIa to generate calcipotriol or calcipotriol monohydrate.

34. (New) A method for producing calcipotriol or calcipotriol monohydrate comprising steps (j) – (l) of claim 33 and further comprising the steps of:

- (q) protecting the C-24 hydroxy group of the compound of general structure Va,

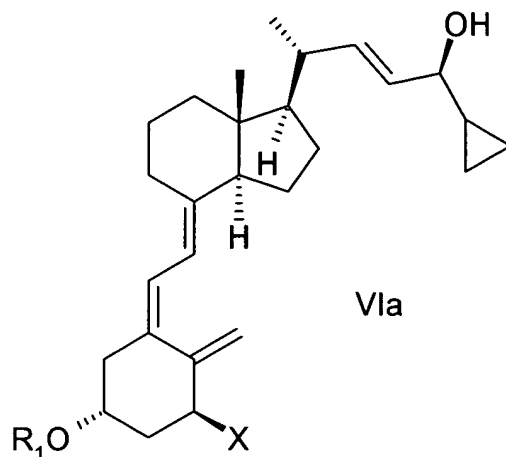


wherein X represents hydrogen, and wherein  $R_1$  represents hydrogen or a hydroxy protecting group, with a hydroxy protecting group;

(r) hydroxylating the C-24 hydroxy protected compound of general structure Va with a suitable hydroxylating agent, wherein X and  $R_1$  are as defined above to give a C-24 hydroxy protected compound of general structure Va, wherein X represents  $OR_2$  and  $R_2$  represents hydrogen, and wherein  $R_1$  is as defined above;

(s) removing the C-24 hydroxy protecting group of the compound of general structure Va;

(t) isomerising the compound of general structure Va to the compound of general structure VIa,



wherein X, R<sub>1</sub> and R<sub>2</sub> are as defined above; and

(u) when R<sub>1</sub> is not hydrogen, removing the hydroxy protecting group R<sub>1</sub> of the compound of general structure VIa to generate calcipotriol or calcipotriol monohydrate.

35. (New) The method according to claim 30, wherein the reducing step is with a reducing agent in the presence of a chiral auxiliary.

36. (New) The method according to claim 30, wherein the reducing agent is a borane derivative.

37. (New) The method according to claim 35, wherein the reducing agent is *N,N*-diethylaniline-borane, borane-tetrahydrofuran, or borane dimethylsulfide.

38. (New) The method according to claim 35, wherein the chiral auxiliary is a chiral 1,2-amino-alcohol.

39. (New) The method according to claim 35, wherein the chiral auxiliary is a chiral *cis*-1-amino-2-indanol derivative.

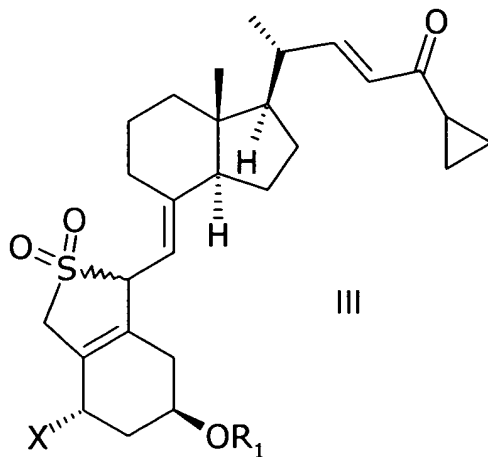
40. (New) The method according to claim 35, wherein the chiral auxiliary is (*1S,2R*)-(-)-*cis*-1-amino-2-indanol.

41. (New) The method according to claim 30, wherein the inert solvent is toluene, *tert*-butyl methyl ether, tetrahydrofuran, or mixtures thereof.

42. (New) The method according to claim 30, wherein the mixture of compounds of general structure IVa and IVb obtained by reducing a compound of general structure III has a molar ratio of IVa:IVb which is at least 56:44.

43 (New) The method according to claim 40, wherein the reducing step is carried out at a temperature between 10-20°C.

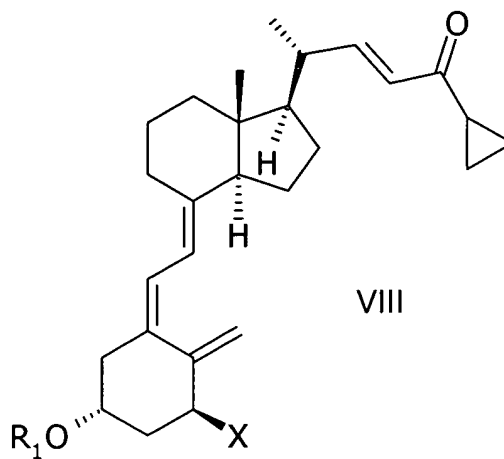
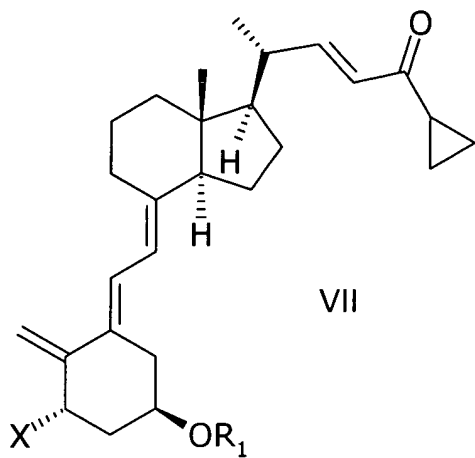
44. (New) A method for producing a compound of general structure III,



wherein X represents either hydrogen or OR<sub>2</sub>,

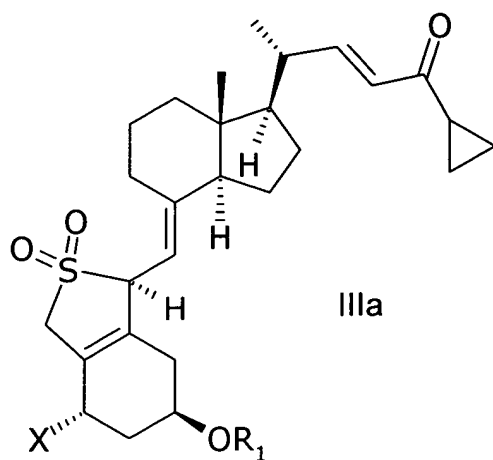
and wherein R<sub>1</sub> and R<sub>2</sub> may be the same or different and represent hydrogen, or a hydroxy protecting group,

by reacting a compound of general structure VII or VIII,

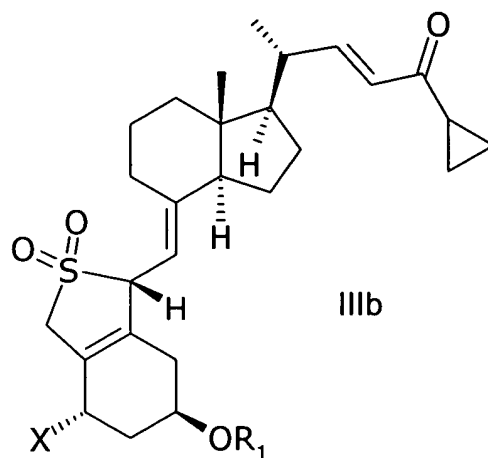


wherein  $R_1$  and  $R_2$  are as defined above,  
with sulphur dioxide.

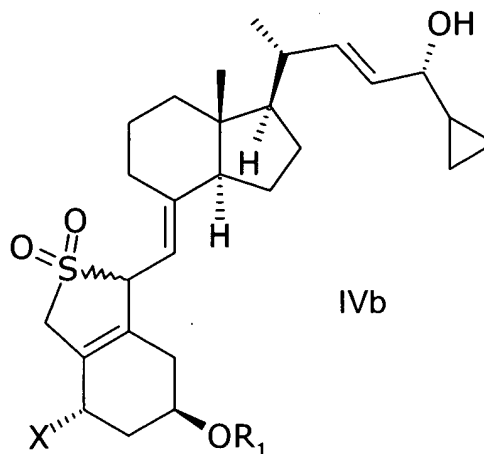
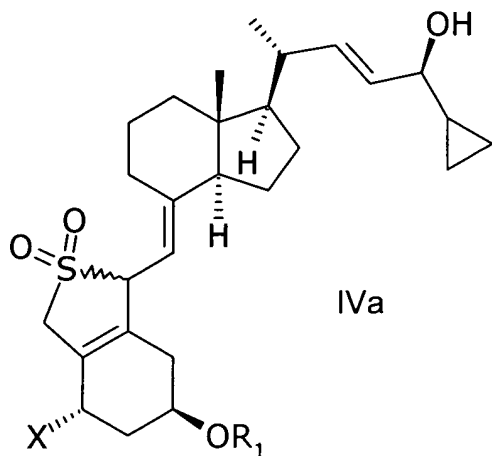
45. (New) A method according to claim 30 or 44, wherein the compound of general structure III is the epimer of general structure IIIa



46. (New) A method according to claim 30 or 44, wherein the compound of general structure III is the epimer of general structure IIIb



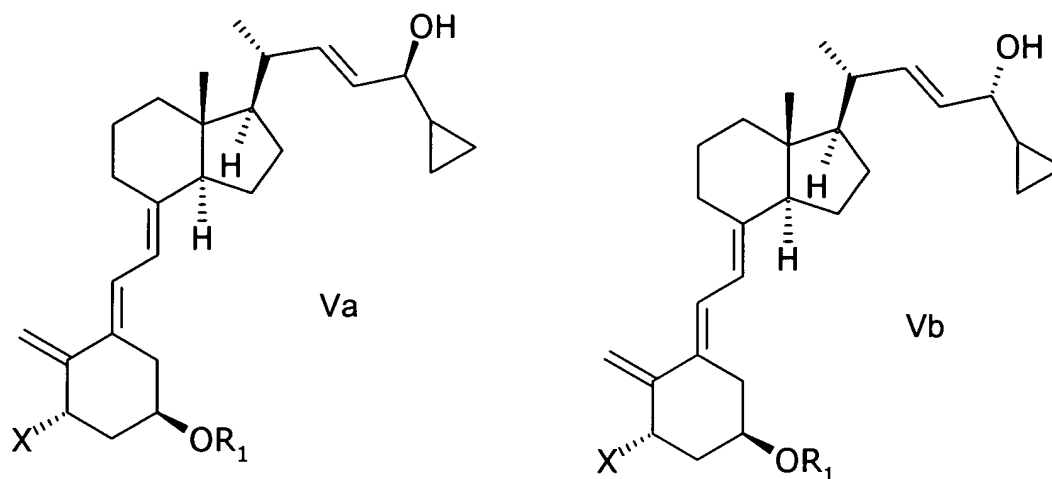
47. (New) A method of reacting the mixture of compounds of general structure IVa and IVb ,



wherein X represents either hydrogen or OR<sub>2</sub>,

and wherein R<sub>1</sub> and R<sub>2</sub> may be the same or different and represent hydrogen, or a hydroxy protecting group,

which is enriched with IVa, in the presence of a base to give a mixture of compounds of general structure Va and Vb, which is enriched with Va,

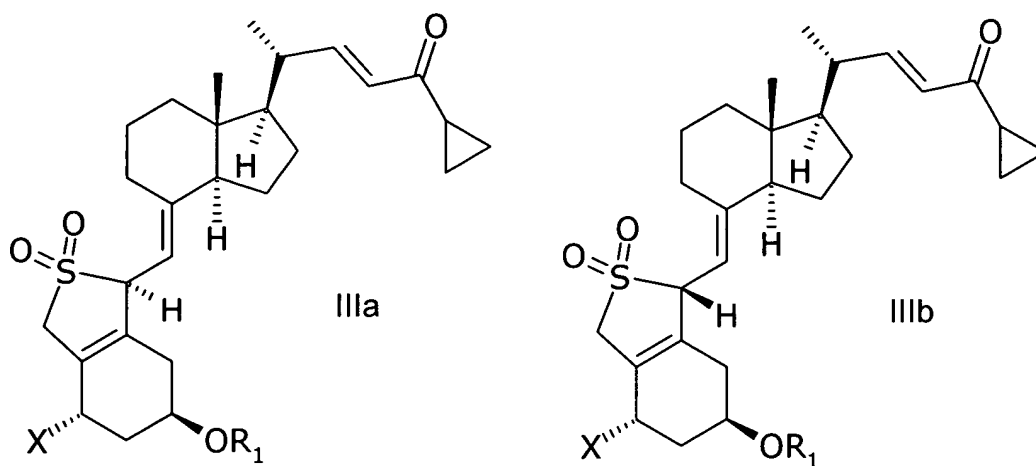


wherein X, R<sub>1</sub>, and R<sub>2</sub> are as defined above.

48. (New) A method according to claim 30, 44, or 47, wherein X represents OR<sub>2</sub>.
49. (New) A method according to claim 48, wherein R<sub>1</sub> and/or R<sub>2</sub> represent alkylsilyl.
50. (New) A method according to claim 48, wherein R<sub>1</sub> and/or R<sub>2</sub> represent *tert*-butyldimethylsilyl.

51. (New) A method for producing calcipotriol {(5Z, 7E, 22E, 24S)-24-cyclopropyl-9,10-secochola-5,7,10(19),22-tetraene-1 $\alpha$ -3 $\beta$ -24-triol} or calcipotriol monohydrate comprising the method of claim 30, 44, or 47.

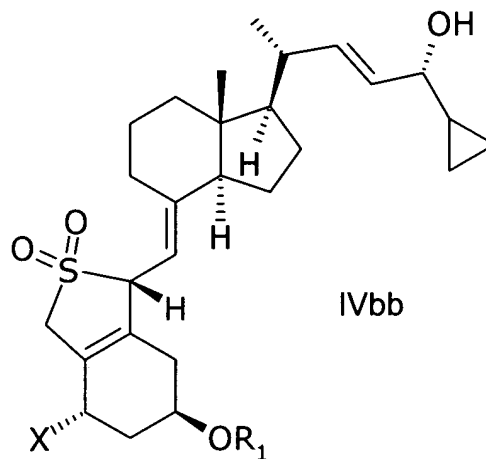
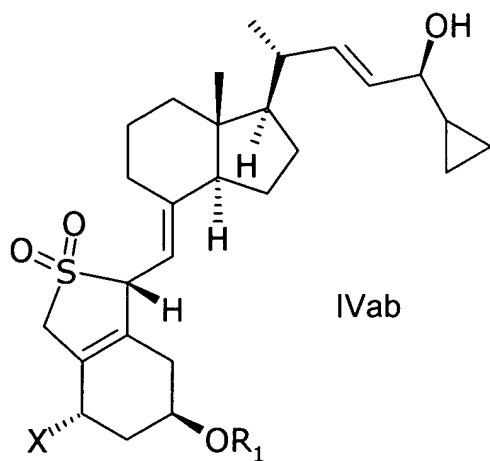
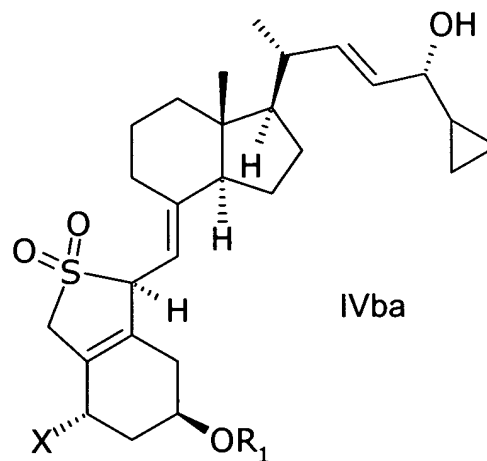
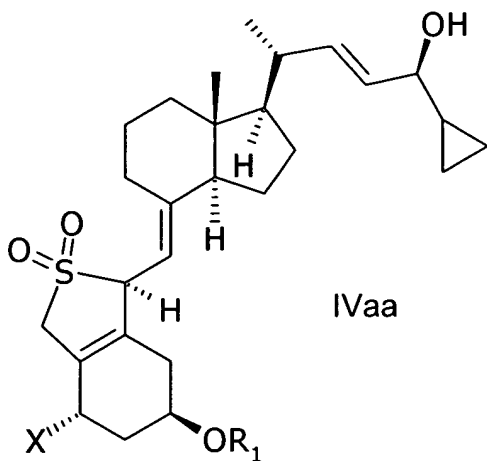
52. (New) A compound of general structure IIIa or IIIb, or mixtures thereof,



wherein X represents either hydrogen or OR<sub>2</sub>,

and wherein R<sub>1</sub> and R<sub>2</sub> may be the same or different and represent hydrogen, or a hydroxy protecting group.

53. A compound of general structure IVaa, IVab, IVba, IVbb, IVb, or mixtures thereof,



wherein X represents either hydrogen or  $\text{OR}_2$ ,

and wherein  $\text{R}_1$  and  $\text{R}_2$  may be the same or different and represent hydrogen, or a hydroxy protecting group.

54. (New) A compound according to claim 52 or 53, wherein X represents  $OR_2$ .
55. (New) A compound according to claim 54, wherein  $R_1$  and  $R_2$  represent alkylsilyl.
56. (New) A compound according to claim 54, wherein  $R_1$  and  $R_2$  represent *tert*-butyldimethylsilyl.
57. (New) A compound according to claim 54, wherein  $R_1$  and  $R_2$  represent hydrogen.
58. (New) Use of a compound according to claim 52 or 53 as an intermediate in the manufacture of calcipotriol or calcipotriol monohydrate.